University of Technology Sydney

The Impact of Mandatory Savings on Life Cycle Consumption and Portfolio Choice

A thesis submitted for the degree of Doctor of Philosophy

by

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Abstract

Retirement income systems have increasingly attracted academic research and policy discussion in the light of population aging in developed countries. Management of retirement wealth is of first order importance if sustainable pension systems are to be maintained while providing desirable retirement living standards. In Australia, employers have been compelled by the Superannuation Guarantee to make minimum contributions to retirement accounts on behalf of their employees. Nevertheless, the structure of superannuation is still being discussed and reformed with the aim of making it a better, fairer and more cost-effective system. While there are many empirical studies and policy reviews, research addressing the impact and efficiency of superannuation from a theoretical perspective is lacking.

To fill this gap, and to contribute to the wealth management literature, this thesis examines the impact of mandated contributions into superannuation accounts on individuals' lifetime consumption, risky asset allocation and wealth using a continuous time dynamic life cycle model. First, in Chapter 2, we provide a dynamic model incorporating the compulsory savings constraint for a representative agent. The agent is endowed with deterministic labour income, and assumed to rationally make decisions that maximise his lifetime utility of consumption. Consistent with the primary aim of superannuation, we clearly identify and conclude that compulsory contributions alter the agent's consumption behaviour and risky investment to be more conservative, which in turn may increase the agent's total wealth over the life cycle.

Building on the model in Chapter 2, we further introduce a life insurance purchase to hedge the mortality risk of the representative agent in Chapter 3. The dynamic model in Chapter 3 is an extension of the work of Pliska and Ye (2007), in which we further consider the forced savings constraint. In addition to the foundational results derived in Chapter 2, we demonstrate a lower bequest value and lower life insurance demand under the compulsory savings constraint.

In Chapter 4 we calibrate the theoretical model to the Household, Income and Labour Dynamics in Australia (HILDA) survey data and conduct a range of policy analyses. In particular, we can investigate the welfare loss arising from the one-rate-for-all compulsory

contribution rules. Simulations of optimal paths show that the consumption of low-wealth individuals is severely constrained under current settings, resulting in a sizeable welfare loss. In response, we propose a time-varying contribution rate for individuals, which can mitigate the welfare loss while enhancing retirement wealth to achieve a desired retirement living standard.

Certificate of Authorship and Originality

I certify that the work presented in this thesis has not previously been submitted for another degree, and nor has it been submitted in partial fulfilment of the requirements of another degree. I also certify that the thesis has been written by me. All help received with my research, or in the preparation of the thesis itself, has been acknowledged. In addition, I certify that all information and results obtained from the literature and other sources have been properly credited.

Signature of Student

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